MicroDoc Computersysteme GmbH

JCP EC Meeting Munich 24.04.2024

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Safe harbor statement

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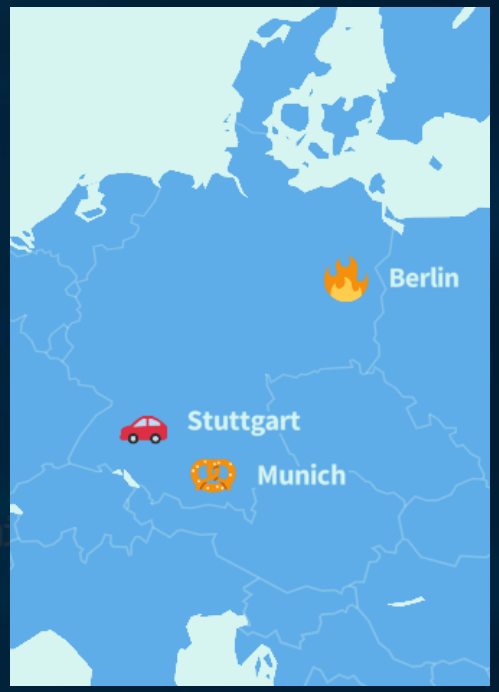
- GraalVM Native Image technology (including SubstrateVM) is Early Adopter technology. It remains subject to potentially significant further changes, compatibility testing and certification.

- Java™ and Java related trademarks as well as GraalVM™ are trademarks or registered trademarks of Oracle Corporation and/or its affiliates.

Who we are

- Focus: Embedded, IoT, Cloud
- Industry secotrs: Automotive, Energy, Finance

- Founded in 1991
- Member of the Data Respons Group since 2016
- 64 software engineers in 3 locations
- 3 Locations: Munich, Stuttgart and Berlin



- Customized conception, development and maintenance of software systems
- Leading European provider of Java™ and GraalVM™ runtimes and technologies

History – early days

- Smalltalk
- IBM Notes Smalltalk interface
- Then started with J9

IBM J9

- Until Java 1.4
- Projects
  - Car industry
  - Fire alarms
  - Emergency call modules
  - Credit card terminals

Java SE 8 / OpenJDK

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- Example of projects
  - Windows CE port for Handheld devices
  - Real time operating system support
    - (not real time java)
- JavaFX as GUI

OpenSSL / Conscrypt

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- Java Security Provider based on OpenSSL/BoringSSL
- Original code from Android (BoringSLL)
- Reason: use single implementation of Cryptographic primitives

- New OpenJDK Project: Brisbane
  - FIPS 140

Project Brisbane: https://mail.openjdk.org/pipermail/announce/2024-March/000347.html

GraalVM Native Image

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- Cloud and Embedded share similar problems

- Features
  - Reduce startup time and memory consumption
  - Security (reduce dynamic behaviour)
- Support non-standard targets
  - 32-bits architectures (ARM, x86)

Reference project: Fleet management

- Daimler Trucks is the leading manufacturer of commercial vehicles and buses

OUR ROLE AND EXPERTISE

Together with Daimler Trucks, we have set up a complete digital fleet management system:

- In the vehicle: Java-based telematics platform
- For the driver: Java-based handheld devices and info screens
- In the data center: Cloud-based and secure architecture for vehicle and driver dataand driver data

CUSTOMER ADDED VALUE

- Enables real-time routing of trucks and more efficient utilization of the entire fleet
- Connectivity enables over-the-air updates that allow features to be added or removed
- The platform saves costs and protects investments by extending the lifecycle of hardware components through software updates
- Our DevSecOps team ensures continuous operation

Reference project: EnergyBASE

- EnBW is one of the largest energy supply companies in Germany and Europe
- MicroDoc supported EnBW in the development of an intelligent energy consumption measuring device called EnergyBASE

OUR ROLE AND EXPERTISE

We created a software stack that enables a smart home metering device to decide whether the self-generated electricity should be fed into the storage system, consumed immediately or sold.

We provided project management and software architecture, test management and cloud deployment (Azure).

Technologies used:
- Embedded development (Java programming based on OSGi)
- Web application with Java/JavaScript
- Mobile development for Android, iOS

CUSTOMER ADDED VALUE

- EnergyBASE enables a smart grid in which companies and private households can optimize their consumption profile and sell electricity to other consumers
- A software stack for bridging business models that enables multiple revenue streams simultaneously

Community projects

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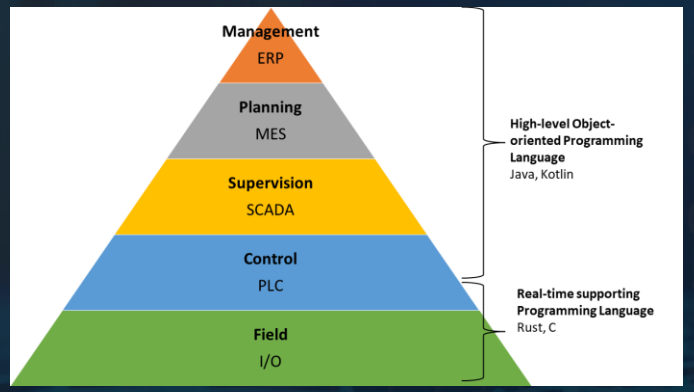
- PMD
  - Cross-language static code analyzer
  - Project maintainer works at MicroDoc
  - Recently released v7

Spread the word!

- Publish Technology Blogs
- Reach new industries
  - e.g. PLC



Present and Future of Java

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- New release strategy was a good idea
  - Release new feature faster
- Backward compatibility -> No fear to updates
- Foreign Function and Memory API
  - Interoperate with code and memory outside the JVM
  - Alternative to JNI
  - Key future for the future of Java

Future of Java / AI

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- Java can play a role in AI applications
  - Support frameworks and libraries
  - Simplify integrating AI capabilities into Java applications
- Demo intelligent charging station